

What is claimed:

1 1. An end face light-emitting thyristor for emitting light from an end face
2 thereof, comprising:

3 a first semiconductor layer of a first conductivity type, a second semiconductor
4 layer of a second conductivity type, a third semiconductor layer of the first conductivity
5 type, and a fourth semiconductor layer of the second conductivity type stacked in that
6 order on a substrate of the first conductivity type,

7 an electrode provided in such a manner that a part thereof makes ohmic contact
8 with the fourth semiconductor layer in the vicinity of the end face for injecting current into
9 the semiconductor layers, and

10 an insulating layer provided between the fourth semiconductor layer and the part of the
11 electrode that is not made ohmic contact with the fourth semiconductor layer.

1 2. An end face light-emitting thyristor of claim 1, wherein an opening is formed
2 in the part of the insulating layer faced to the end face, the electrode making ohmic
3 contact with the fourth semiconductor layer via the opening.

1 3. A self-scanning light-emitting element array, comprising:

2 a structure in which a plurality of light-emitting elements each having a control
3 electrode for controlling threshold voltage or current for light-emitting operation are
4 arranged, the control electrodes of the light-emitting elements are connected to the
5 control electrode of at least one light-emitting element located in the vicinity thereof via an
6 interactive resistor, and a plurality of wiring to which voltage or current is applied are
7 connected to electrodes for controlling the light emission of light-emitting elements, and

8 wherein the light-emitting element is an end face light-emitting thyristor as set
9 forth in claim 1 or 2.

1 4. A self-scanning light-emitting element array, comprising:

2 a structure in which a plurality of light-emitting elements each having a control
3 electrode for controlling threshold voltage or current for light-emitting operation are
4 arranged, the control electrodes for the light-emitting elements are connected to the
5 control electrode of at least one light-emitting element located in the vicinity thereof via an
6 electrically unidirectional element, and a plurality of wiring to which voltage or current is
7 applied are connected to electrodes for controlling the light emission of light-emitting
8 elements, and

9 wherein the light-emitting element is an end face light-emitting thyristor as set
10 forth in claim 1 or 2.

1 5. An end face light-emitting thyristor of claim 4, wherein the electrically
2 unidirectional element is a diode.

1 6. A self-scanning light-emitting element array, comprising:

2 a self-scanning transfer element array having such a structure that a plurality of
3 transfer elements each having a control electrode for controlling threshold voltage or
4 current for transfer operation are arranged, the control electrodes of the transfer elements
5 are connected to the control electrode of at least one transfer element located in the
6 vicinity thereof via an interactive resistor, power-supply lines are connected to the transfer
7 elements by electrical means, and clock lines are connected to the transfer elements, and

8 a light-emitting element array having such a structure that a plurality of light-
9 emitting elements each having a control electrode for controlling threshold voltage or
10 current are arranged, the control electrodes of the light-emitting element array are
11 connected to the control electrodes of said transfer elements by electrical means, and lines
12 for applying current for light emission of the light-emitting element are provided,

13 wherein the light-emitting element is an end face light-emitting thyristor as set
14 forth in claim 1 or 2.

1 7. A self-scanning light-emitting array, comprising:

- 16 -

2 a self-scanning transfer element array having such a structure that a plurality of
3 transfer elements each having a control electrode for controlling threshold voltage or
4 current for transfer operation are arranged, the control electrodes of the transfer elements
5 are connected to the control electrode of at least one transfer element located in the
6 vicinity thereof via an electrically unidirectional element, power-supply lines are connected
7 to the transfer elements by electrical means, and clock lines are connected to the transfer
8 elements, and

9 a light-emitting element array having such a structure that a plurality of light-
10 emitting elements each having a control electrode for controlling threshold voltage or
11 current are arranged, the control electrodes of the light-emitting element array are
12 connected to the control electrodes of said transfer elements by electrical means, and lines
13 for applying current for light emission of the light-emitting element are provided,

14 wherein the light-emitting element is an end face light-emitting thyristor as set
15 forth in claim 1 or 2.

1 8. An end face light-emitting thyristor of claim 7, wherein the electrically
2 unidirectional element is a diode.